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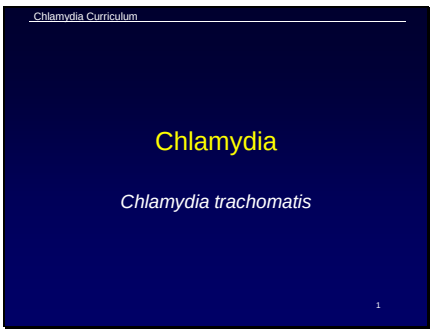

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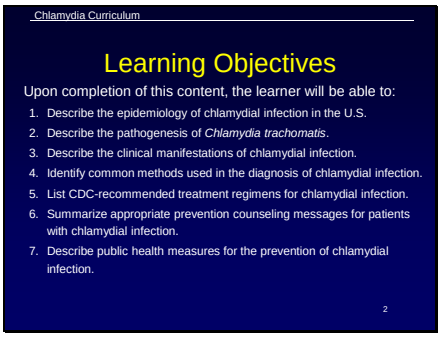

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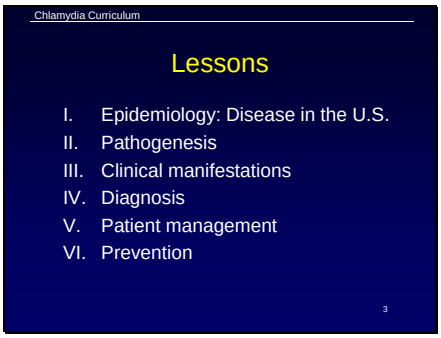

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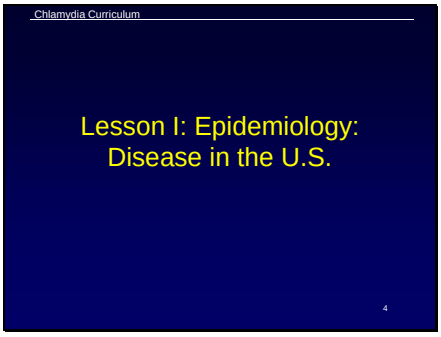

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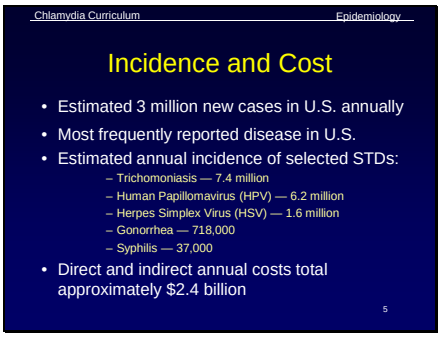

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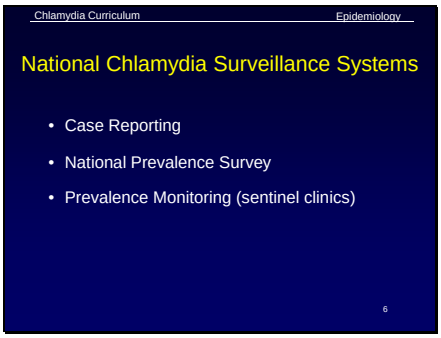

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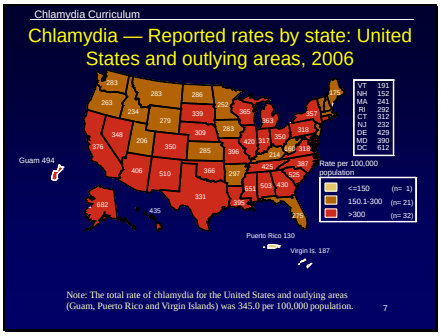

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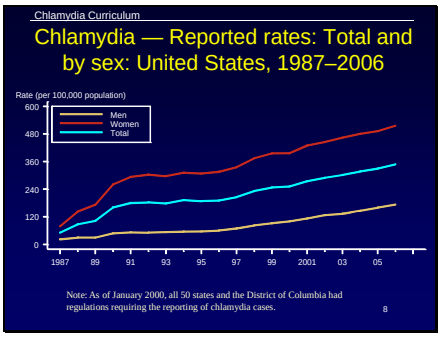

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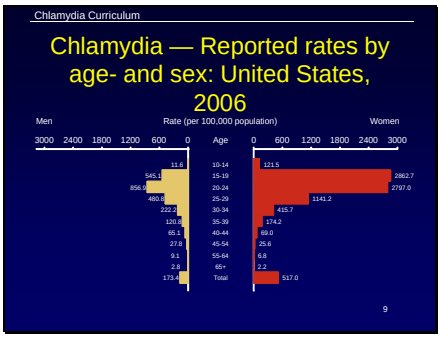

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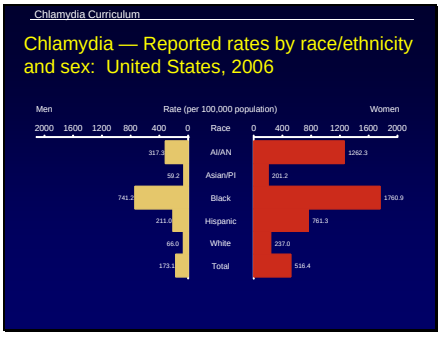

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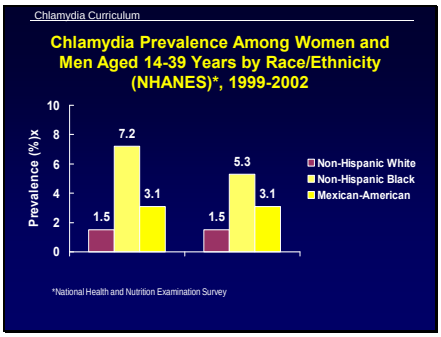

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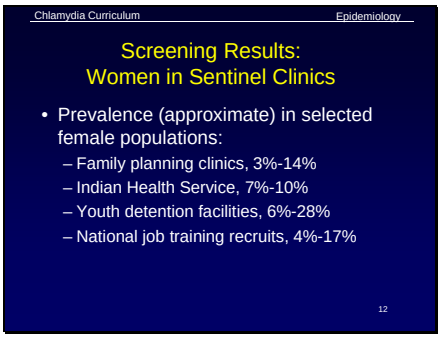


Slide 13

Figure 7. Chlamydia — Trends in positivity among 15- to 24-year-old women tested in family planning clinics by HHS region, 2002–2006

Note: Trends adjusted for changes in laboratory test method and associated increases in test sensitivity.

SOURCE: Regional Infertility Prevention Projects, Office of Population Affairs; Local and State STD Control Programs, Centers for Disease Control and Prevention

Slide 14

Risk Factors

- Adolescence
- New or multiple sex partners
- History of STD infection
- Presence of another STD
- Oral contraceptive user
- Lack of barrier contraception

Slide 15

Transmission

- Transmission is **sexual** or **vertical**
- Highly transmissible
- Incubation period 7-21 days
- Significant asymptomatic reservoir
- Re-infection is common
- Perinatal transmission results in neonatal conjunctivitis in 30%-50% of exposed babies

Slide 16

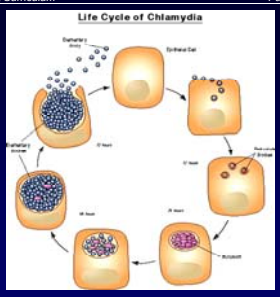
Lesson II: Pathogenesis

Slide 17

Microbiology

- Obligatory intracellular bacteria
- Infect columnar epithelial cells
- Survive by replication that results in the death of the cell
- Takes on two forms in its life cycle:
  - Elementary body (EB)
  - Reticulate body (RB)

Slide 18



Source: California STD/HIV Prevention Training Center

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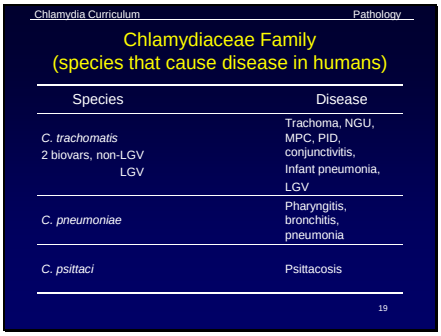

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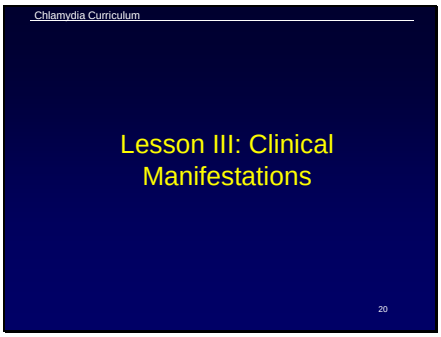

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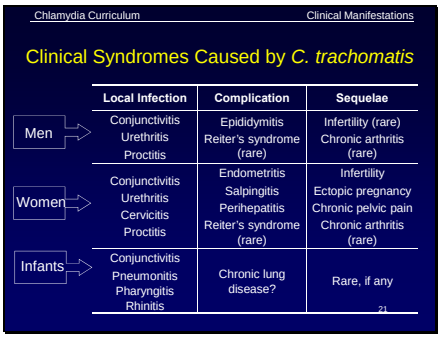


Slide 22

C. trachomatis Infection in Men

- Urethritis–One cause of non-gonococcal urethritis (NGU)
  - Majority (>50%) asymptomatic
  - Symptoms/signs if present: mucopurulent, mucoid or clear urethral discharge, dysuria
  - Incubation period unknown (probably 5-10 days in symptomatic infection)

Slide 23

Non-Gonococcal Urethritis: Mucoid Discharge

Source: Seattle STD/HIV Prevention Training Center at the University of Washington/UW HSCER Slide Bank

Slide 24

C. trachomatis Complications in Men

- Epididymitis
- Reiter's Syndrome

Slide 25

Swollen or tender testicles (epididymitis)

Source: Seattle STD/HIV Prevention Training Center at the University of Washington

Slide 26

C. trachomatis Infections in Women

- Cervicitis
  - Majority are asymptomatic
  - Local signs of infection, when present, include:
    - Mucopurulent endocervical discharge
    - Edematous cervical ectopy with erythema and friability
- Urethritis
  - Usually asymptomatic
  - Signs/symptoms, when present, include dysuria, frequency, pyuria

Slide 27

Normal Cervix

Source: STD/HIV Prevention Training Center at the University of Washington/Claire E. Stevens

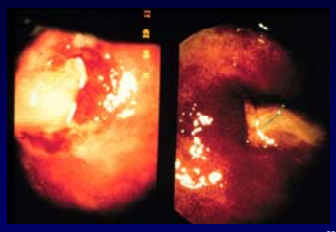
Slide 28

Chlamydial Cervicitis

Source: STD/HIV Prevention Training Center at the University of Washington/Connie Celum and Walter Stamm

Slide 29

Cervicitis



Source: St. Louis STD/HIV Prevention Training Center

Slide 30

C. trachomatis Complications in Women

- Pelvic Inflammatory Disease (PID)
  - Salpingitis
  - Endometritis
- Perihepatitis (Fitz-Hugh-Curtis Syndrome)
- Reiter's Syndrome

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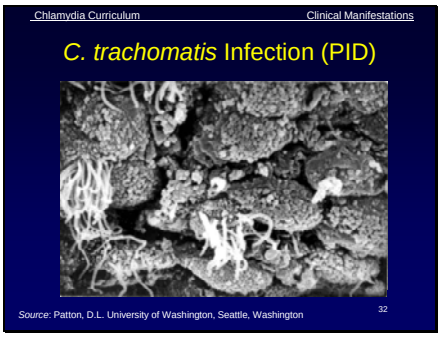
Slide 32



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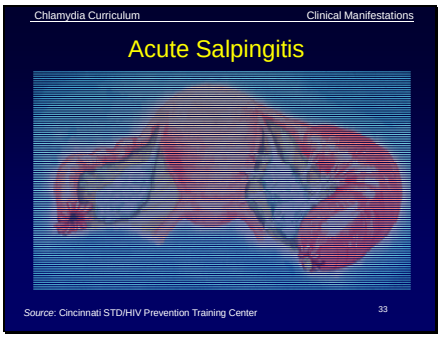

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C. trachomatis Syndromes Seen in Men or Women

- Non-LGV serovars
  - Conjunctivitis
  - Proctitis
  - Reiter's Syndrome
- LGV serovars
  - Lymphogranuloma venereum

Slide 35

LGV Lymphadenopathy

Source: CDC Division of STD Prevention Clinical Slides

Slide 36

C. trachomatis Infections in Infants

- Perinatal clinical manifestations:
  - Inclusion conjunctivitis
  - Pneumonia

Slide 37

C. trachomatis Infections in Children

- Pre-adolescent males and females:
  - Urogenital infections
    - Usually asymptomatic
    - Vertical transmission
    - Sexual abuse

Slide 38

Lesson IV: Diagnosis

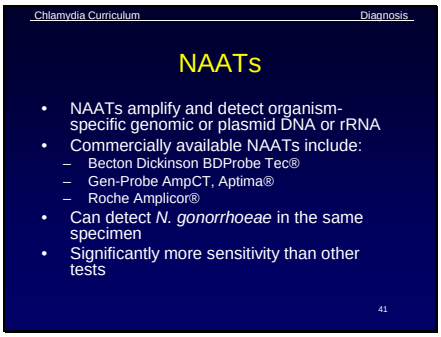
Slide 39

Testing Technologies

- Culture
- Non-culture tests
  - Nucleic Acid Amplification Tests (NAATs)
  - Non-Amplification Tests
  - Serology

Slide 40

Slide 41



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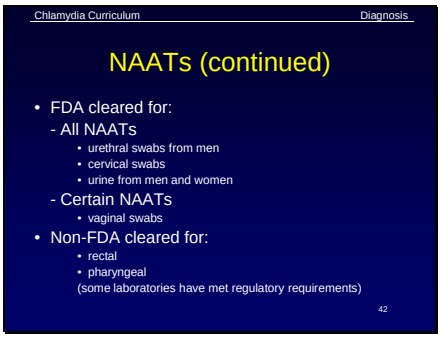

Slide 43

Non-Amplication Tests

- Direct fluorescent antibody (DFA)
  - Detects intact bacteria with a fluorescent antibody
  - Variety of specimen sites
- Enzyme immunoassay (EIA)
  - Detects bacterial antigens with an enzyme-labeled antibody
- Nucleic acid hybridization (NA probe)
  - Detects specific DNA or RNA sequences of *C. trachomatis* and *N. gonorrhoeae*

Slide 44

Serology

- Rarely used for uncomplicated infections
- Comparative data between types of serologic test are lacking
- Criteria used in LGV diagnosis
  - Complement fixation titers >1:64 can support diagnosis in the appropriate clinical context
  - Serologic test interpretation for LGV is not standardized

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Lesson V: Patient Management

Slide 46

Treatment of Uncomplicated Genital Chlamydial Infections

CDC-recommended regimens
- Azithromycin 1 g orally in a single dose, OR
- Doxycycline 100 mg orally twice daily for 7 days

Alternative regimens
- Erythromycin base 500 mg orally 4 times a day for 7 days, OR
- Erythromycin ethylsuccinate 800 mg orally 4 times a day for 7 days, OR
- Ofloxacin 300 mg orally twice a day for 7 days
- Levofloxacin 500 mg orally once a day for 7 days

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Treatment of Chlamydial Infection in Pregnant Women

CDC-recommended regimens
- Azithromycin 1 g orally in a single dose, OR
- Amoxicillin 500 mg orally 3 times a day for 7 days

Alternative regimens
- Erythromycin base 500 mg orally 4 times a day for 7 days, OR
- Erythromycin base 250 mg orally 4 times a day for 14 days, OR
- Erythromycin ethylsuccinate 800 mg orally 4 times a day for 7 days, OR
- Erythromycin ethylsuccinate 400 mg orally 4 times a day for 14 days, OR

Slide 48

Treatment of Neonatal Conjunctivitis and/or Pneumonia

CDC-recommended regimen
- Erythromycin base or ethylsuccinate 50 mg/kg/day orally divided into 4 doses daily for 14 days

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Treatment of Chlamydial Infection in Children

Children who weigh <45 kg:

- Erythromycin base or ethylsuccinate 50 mg/kg/day orally divided into 4 doses daily for 14 days

Children who weigh ≥45 kg, but are <8 years of age:

- Azithromycin 1 g orally in a single dose

Children ≥8 years of age:

- Azithromycin 1 g orally in a single dose, OR
- Doxycycline 100 mg orally twice a day for 7 days

Slide 50

Treatment of Lymphogranuloma Venereum (LGV)

CDC-recommended regimen

- Doxycycline 100 mg orally twice a day for 21 days

Alternative regimen

- Erythromycin base 500 mg orally 4 times a day for 21 days

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Repeat Testing after Treatment

- Pregnant women
  - Repeat testing, preferably by NAAT, 3 weeks after completion of recommended therapy
- Non-pregnant women
  - Test of cure not recommended unless compliance is in question, symptoms persist, or re-infection is suspected
  - Repeat testing recommended 3-4 months after treatment, especially adolescents due to high prevalence of repeated infection
  - Screen at next health care visit

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Lesson VI: Prevention

Slide 53

Why Screen for Chlamydia?

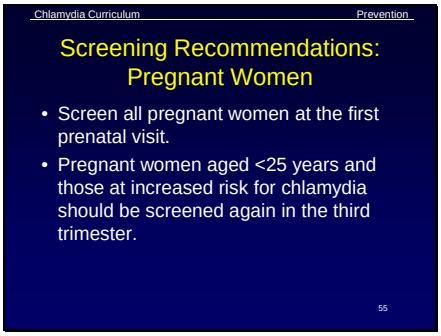
- Screening can reduce the incidence of PID by more than 50%.
- Most infections are asymptomatic.
- Screening decreases the prevalence of infection in the population and reduces the transmission of disease.

Slide 54

Screening Recommendations: Non-pregnant Women

- Sexually active women age 25 years and under should be screened annually.
- Women >25 years old should be screened if risk factors are present.
- Repeat testing of all women 3-4 months after treatment for *C. trachomatis* infection, especially adolescents.
- Repeat testing of all women treated for *C. trachomatis* when they next present for care within 12 months.

Slide 55



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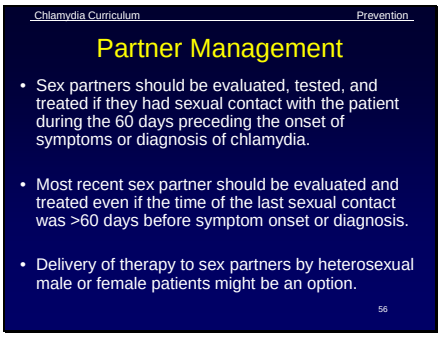

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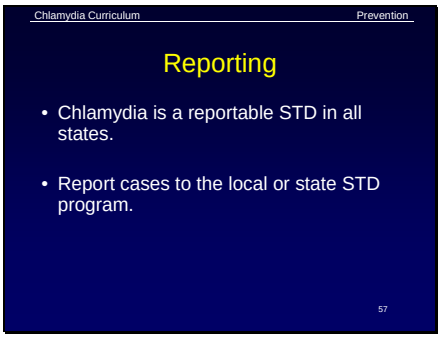

Slide 58

Prevention Counseling

- Nature of the infection
  - Chlamydia is commonly asymptomatic in men and women.
  - In women, there is an increased risk of upper reproductive tract damage with re-infection.
- Transmission issues
  - Effective treatment of chlamydia may reduce HIV transmission and acquisition.
  - Abstain from sexual intercourse until partners are treated and for 7 days after a single dose of azithromycin or until completion of a 7-day regimen.

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Prevention Counseling (continued)

- Risk reduction

  The clinician should:
  - Assess the patient's behavior-change potential.
  - Discuss prevention strategies (abstinence, monogamy, condoms, limit number of sex partners, etc.). Latex condoms, when used consistently and correctly, can reduce the risk of transmission of chlamydia.
  - Develop individualized risk-reduction plans.

Slide 60

Case Study

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History

- Suzy Jones: 17-year-old college student who presents to the Student Health Center seeking advice about contraception
- Shy talking about her sexual practices
- Has never had a pelvic exam
- Has had 2 sex partners in past 6 months
- Does not use condoms or any other contraceptives
- Her periods have been regular, but she has recently noted some spotting between periods. Last menstrual period was 4 weeks ago.
- Denies vaginal discharge, dyspareunia, genital lesions, or sores

Slide 62

Physical Exam

- Vital signs: blood pressure 118/68, pulse 74, respiration 18, temperature 37.1° C
- Breast, thyroid, and abdominal exam within normal limits
- Genital exam reveals normal vulva and vagina
- The cervix appears inflamed, bleeds easily, with a purulent discharge coming from the cervical os.
- Bimanual exam is normal without cervical motion pain, uterine or adnexal tenderness.

Slide 63

Questions

1. What is the initial clinical diagnosis?
2. What is the most *likely* microbiologic diagnosis?
3. Which laboratory tests should be ordered or performed?
4. What is the appropriate treatment at the initial visit?

Slide 64

Laboratory Results

- NAAT for *Chlamydia trachomatis*: positive
- NAAT for *Neisseria gonorrhoeae*: negative
- RPR: negative
- Wet mount: pH 4.2, no clue cells or trichomonads but numerous WBCs
- KOH preparation: negative for "whiff test"
- HIV antibody test: negative
- Pregnancy test: negative

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Questions

5. What is the final diagnosis?
6. What are the appropriate prevention and counseling messages for Suzy?
7. Who is responsible for reporting this case to the local health department?

Slide 66

Partner Management

Suzy's sex partners from the past year:

- John – Last sexual exposure 5 weeks ago
- Tom – Last sexual exposure 7 months ago
- Michael – Last sexual exposure 2 weeks ago



8. Which sex partners should be evaluated, tested, and treated?

Slide 67

Follow-Up

Suzy returned for a follow-up visit at 4 months.

- Her repeat chlamydia test returned positive.
- Suzy stated that her partner, Michael, went to get tested, but the test result was negative so he was not treated.

9. What is the appropriate treatment at the 4-month follow-up visit?